ITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

October 30, 2015

Carolyn Murphy
Acting Chief
Plan Formulation Section
U.S. Army Corps of Engineers
Galveston District
P.O. Box 1229
Galveston, TX 77553-1229

RE: Sabine Pass to Galveston Bay, Texas, Coastal Storm Risk Management and Ecosystem Restoration Draft Integrated Feasibility Report (DIFR) and Draft Environmental Impact Statement (DEIS)

Dear Ms. Murphy:

In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) regulations for implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office, Dallas, Texas has completed its review of the proposed Sabine Pass to Galveston Bay, Texas, Coastal Strom Risk Management and Ecosystem Restoration Draft Integrated Feasibility Report (DIFR) and Draft Environmental Impact Statement (DEIS) prepared by the Galveston District, U.S. Army Corps of Engineers (COE) and Texas General Land Office.

The DIFR and DEIS examines coastal storm risk management (CSRM) and ecosystem restoration (ER) opportunities within six counties of the upper Texas coast (Orange, Jefferson, Chambers, Harris, Galveston, and Brazoria Counties). Currently, the study has identified and screened alternatives to address CSRM and ER, and is presenting a Tentatively Selected Plan (TSP). This DIFR and DEIS will undergo public review, policy review, Agency Technical Review (ATR), and Independent External Peer Review (IEPR). The COE study team will respond to review comments, then present a recommended plan and develop a Final Integrated Feasibility Report and Final Environmental Impact Statement.

EPA has rated the DEIS as **EC-2**, i.e.; (**Environmental Concerns and Request Additional Information**). The EPA's Rating System Criteria can be found at http:/www.epa.gov/compliance/nepa/comments/ratings.html. We have enclosed detailed comments that identify our concerns and recommendations for additional analysis in the Final EIS (FEIS).

EPA appreciates the opportunity to review the DIFR and DEIS. Please note that a copy of this letter will be published on our website, http://www.epa.gov/compliance/nepa/eisdata.html, in order to fulfill our responsibility under Section 309 of the CAA to inform the public of our views on the proposed Federal action. Please send our office one copy of the FEIS when it is filed using our *e-NEPA Electronic Filing System* at http://www.epa.gov/compliance/nepa/submiteis/index.html. If you have any questions or concerns, please contact me at (214) 665-7451or jansky.michael@epa.gov for assistance.

Sincerely,

Michael Jansky, P.E, Acting Chief
Office of Planning and Coordination (6ENXP)
Compliance Assurance and Enforcement Division

Enclosure

DETAILED COMMENTS
ON THE
U.S. ARMY CORPS OF ENGINEERS (COE)
AND
TEXAS GENERAL LAND OFFICE (TGLO)
DRAFT INTERGRATED FEASIBILITY REPORT AND
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
SABINE PASS TO GALVESTON BAY, TEXAS,
COASTAL STORM RISK MANAGEMENT (CSRM) AND
ECOSYSTEM RESTORATION (ER) PROJECT

Background

General Authority

Authorization for the this study is derived from a resolution from the United States Congressional Committee on Environmental and Public Works dated June 23, 2004, entitled "Coastal Texas Protection and Restoration Study".

By resolution dated June 23, 2004 entitled "Coastal Texas Protection and Restoration Study", the Committee on Environment and Public Works, U.S. Senate has requested that in accordance with Section 110 of the Rivers and Harbors Act of 1962 the Secretary of the Army develop a comprehensive plan for severe erosion along coastal Texas for the purposes of shoreline erosion and coastal storm damages, providing for environmental restoration and protection, increasing natural sediment supply to coast, restoring and preserving marshes and wetlands, improving water quality, and other related purposes to the interrelated ecosystem along the coastal Texas area.

The study fits into the overall concept of the authorization to conduct an integrated and coordinated approach to locating and implementing opportunities for CSRM and ER. The purpose of the study is to recommend for Congressional approval a regional CSRM and ER project that encompasses the six coastal counties of the upper Texas coast between Sabine Pass and Galveston Bay.

Study Purpose and Scope

The purpose of this report and DEIS is to present the findings of the feasibility investigations and analyses conducted to determine if there is a Federal interest in potential CSRM and ER projects within the coastal areas of the six-county study area. This study is an interim response to the "Coastal Texas Protection and Restoration Study," authority. Originally, the study was intended to develop recommendations for regional CSRM and ER projects for Congressional approval across a study area encompassing six counties along the upper Texas coast between Sabine Pass and Galveston Bay. Because of a 3x3x3 Rule exemption approved February 25, 2014, the study scope was revised to focus full feasibility planning efforts on CSMR projects in the northern (Orange and Jefferson) and southern (Brazoria County) parts of the study area. Accordingly, the feasibility study effort described here has focused on CSRM

recommendations for the Sabine Region (Orange and Jefferson Counties) and the Brazoria Region (the Freeport metropolitan area in southern Brazoria County). It was agreed that this report would present a programmatic overview of CSRM problems and opportunities in the central Galveston region (Galveston, Harris, and Chambers Counties) and a programmatic assessment of ER opportunities for the entire six-county study area.

The DEIS describes and illustrates measures that were evaluated, combined into potential alternatives, and screened. The alternatives evaluated include an extensive list of CSRM alternatives for Galveston Bay and ER alternatives for the entire six-county area. Reducing life-safety risk is a primary objective of the study; however, careful evaluation of alternatives is required to ensure that structural plans do not increase risk.

Study Area

The study area encompasses six coastal counties of the upper Texas coast (Figure 1-1). Over five million people reside in the six counties, which includes the fourth largest U.S. city (Houston), and three other metropolitan areas (Beaumont/Port Arthur/Orange, Galveston/Texas City, and Freeport/Surfside). Approximately 2.26 million people across the study area live within storm-surge inundation zones, and estimates for a one-month closure of the Houston Ship Channel (HSC) alone are upwards of $60 billion in damages to the national economy.

Non-Federal Sponsor

The Galveston District COE is responsible for the overall management of the study and the report preparation. As the non-Federal sponsor of the study, the TGLO was actively involved throughout the study process. The existing Port Arthur and the Freeport HFPPs local sponsors have expressed interest in cost sharing for the Tentatively Selected Plan (TSP) identified for the Port Arthur and Vicinity CSRM and the Freeport and Vicinity CSRM. The local sponsors responsible for operation and maintenance are the Jefferson Country Drainage District No. 7 and the Velasco Drainage District (VDD), respectively. The local sponsor for Orange-Jefferson CSRM would be Orange and Jefferson Counties. They have also expressed interest in cost share for construction.

COMMENTS

The following comments are offered for COE and TGLO consideration in preparation of the FIFR and FEIS:

Wetlands/Section 404 CWA/Mitigation

The Clean Water Act (CWA) Section 404 regulates the discharge of dredged or fill material into waters of the United States (WOUS), including wetlands and other *special aquatic sites*. Due to the nature of the proposed project, Section 404 will apply for the required dredging and construction of the CSRM alternatives for Galveston Bay and ER alternatives for the entire six-county area, and therefore the project sponsors and/or applicant should coordinate with the

COE.

EPA has developed comments and has identified environmental concerns regarding dredge and fill construction activities and their related impacts to aquatic resources for this project. The EPA Region 6 Section 404/Wetland Section (6WQ) staff developed a list of **General Comments** and **Specific Comments** for your consideration. EPA requests that the information, recommendations, and requested clarifications be incorporated and addressed within the FEIS.

These comments and concerns are included as **ATTACHMENT 1** to the Detailed Comments enclosed with our comment letter. Should you have any specific questions with regard to this attachment, please contact me or Ken Teague of the Region 6 Wetlands Section at 214-665-7451 or 214-665-6687, respectively, for assistance.

Air Quality

PM_{10} Emissions and Fugitive Dust Control:

The EPA appreciates the air quality assessment and analysis, including the estimation of emissions from non-road and on-road equipment using MOVES 2014, that was included in Appendix I of the DEIS. However, given that the scale and geographic scope of the Tentatively Selected Plan (TSP) area is quite large (Sabine Pass to Galveston Bay), EPA believes it is especially important that mitigation measures include the use of best management practices for PM_{10} and fugitive dust control (e.g., gravel roads, soil wetting practices, limiting access, traffic and speed reduction). In order to further reduce potential air quality impacts, the responsible parties should develop a more detailed Construction Emissions Mitigation Plan (Plan) – or modify Appendix I of the DEIS accordingly.

EPA recommends that, in addition to all applicable local, state, or federal requirements, the following mitigation measures be included (**as applicable and practicable**) in the Plan in order to reduce air quality impacts associated with emissions of NOx, CO, CO_2, PM, SO_2, and other pollutants from construction-related activities, any planned structural and non-structural activities (e.g., new levees, surge gates, pump stations, I-walls, railroad track closure structures), and possible future modifications to the roadway system:

Recommendations:

- *Construction Emissions Mitigation Plan* – we recommend the following control measures be included (**as applicable and practicable**) in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other pollutants from construction-related activities:
    - Fugitive Dust Source Controls: We recommend that the plan include these general commitments:

- Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts.
- During grading, use water, as necessary, on disturbed areas in construction sites to control visible plumes.
- Vehicle Speed
    - Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
    - Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on un-stabilized (and unpaved) roads.
    - Post visible speed limit signs at construction site entrances.
- Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable.
- Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable.
- Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project.
- Sweep the first 500 feet of paved roads exiting construction sites, other unpaved roads en route from the construction site, or construction staging areas whenever dirt or runoff from construction activity is visible on paved roads, or at least twice daily (less during periods of precipitation).
- Stabilize disturbed soils (after active construction activities are completed) with a non-toxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method.
- Cover or treat soil storage piles with appropriate dust suppressant compounds and disturbed areas that remain inactive for longer than 10 days. Provide vehicles (used to transport solid bulk material on public roadways and that have potential to cause visible emissions) with covers. Alternatively, sufficiently wet and load materials onto the trucks in a manner to provide at least one foot of freeboard.
- Use wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance routes, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation.

o <u>Mobile and Stationary Source Controls</u>:
- Plan construction scheduling to minimize vehicle trips.

- Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections.

o Administrative controls:
  - Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.
  - Identify any sensitive receptors in the project area, such as children, elderly, and the infirm, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).
  - Include provisions for monitoring fugitive dust in the fugitive dust control plan and initiate increased mitigation measures to abate any visible dust

Climate Change

The DEIS mentions Council on Environmental Quality's (CEQ) guidance entitled "Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions". It is unclear in the DEIS how the guidance was applied to the proposed project. Because any such emission contribute to climate change impacts in the U.S., it is appropriate to consider and disclose them in the EIS due to their reasonably close causal relationship to the project.

Recommendations:

EPA recommends that the FEIS describes measures to reduce GHG emissions associated with the project, including practicable mitigation opportunities and disclose the estimated GHG reductions associated with such measures. EPA further recommends that COE commit to implementation of reasonable mitigation measures that would reduce or eliminate project-related GHG emissions.

Environmental Justice

The DEIS states that based on the findings of an environmental justice review, presented earlier in the report, the Sabine and Brazoria TSPs would not significantly disproportionately affect low-income or minority populations. Data were compiled to help assess the potential impacts on minority and low-income populations within the study area. This information indicates that 10 of the 39 2010 Census tracts in the Brazoria County study area, 20 of the 33 tracts in the Jefferson County study area, and 7 of the 40 tracts in the Orange County study area have minority populations higher than 50 percent.

The potential for impacts from the TSP on protected populations exists primarily at the Orange-Jefferson CSRM since it encompasses the construction of new levees and floodwalls.

For the purposes of making a determination on the potential for impacts on potentially protected populations, the racial makeup of the Census block groups that intersect the footprint of the proposed features of the Orange-Jefferson portion of the TSP were examined. Of the eleven Census block groups, only one displayed a population where more than 50 percent of the population was non-white. Census block 202.1 has a white population of 44.1 percent with the remaining belonging to historically identified minority groups. There is no indication that populations may be protected on the basis of existing income among these Census block groups.

Census block 202.1, however, resides at the very end of the Orange 3 reach of the proposed TSP in Orange County where impacts would not be expected to be as great as the potential impacts in other areas. Public involvement will need to continue to ensure no disproportionate impacts occur for these residents.

Tribal Analysis:

The DEIS states that based on the current information for the proposed levee construction and improvements, there is a potential to affect historic properties and cemeteries. These effects consist of direct impacts from earth moving and excavation activities related to construction and potential indirect effects on historic structures such as diminished view shed from the raising of levees and floodwalls. The COE recommends intensive cultural resources investigations to identify and evaluate any historic properties within proposed construction areas. The scope of these investigations will be determined in concert with the Texas State Historic Preservation Officer (SHPO) and Native American Tribes and in accordance with the Programmatic Agreement for this project.

Prior to the initiation of construction, the DEIS indicates that the COE will make a reasonable and good faith effort to identify historic properties located within the Area of Potential Effects (APE). These steps may include, but are not limited to, background research, consultation, oral history interviews, sample field investigations, and field survey. The level of effort for these activities shall be determined in consultation with the SHPO and any Native American Indian Tribe or Tribes (Tribes) that attach religious and cultural significance to identified properties.

Tribal Cooperating Agency Request Letters were sent to invite tribes to participate as cooperating agencies in the development of the EIS. The letters offered tribes the opportunity to consult regarding any concerns they may have with potential project impacts or review periods. Tribes that were sent letters include the following.

Alabama-Coushatta Tribe of Texas
Comanche Nation of Oklahoma
Coushatta Tribe of Louisiana
Kiowa Indian Tribe of Oklahoma
Mescalero Apache Tribe (NM)
Tonkawa Tribe of Oklahoma.

It is unclear what the referenced "environmental justice review" consisted of and where the findings are summarized in the report. However, the Demographic Analysis in Appendix R provides data on minority and low-income populations within the study area. Assessment of project impacts on minority and low-income populations should involve coordination with those affected populations in some form. Additional outreach should be conducted beyond general public meetings, publication of the Notice of Intent in the Federal Register, and mailing of the notice of availability. The FEIS should describe the outreach conducted to minority and low-income populations.

Recommendation:

EPA believes expanded outreach to Native American Indian Tribes may need to be completed. It is unclear whether the six tribes that were invited to participate as cooperating agencies are the only tribes that attach religious and cultural significance to the Area of Potential Effects. The FEIS should provide a clear explanation of the effort to identify all Tribes, tribal citizens, and tribal resources that may potentially be interested or affected. There is also no information regarding whether any Tribes responded to the cooperating agency request letters or whether tribal consultation was conducted. Outreach and coordination with the appropriate environmental justice populations and Native American Indian Tribes should continue throughout all phases of the project. Collaboration with other federal agencies who work with environmental justice issues and groups is recommended.

ATTACHMENT 1

Sabine Pass to Galveston Bay, Texas
Coastal Storm Risk Management and Ecosystem Restoration
Draft Integrated Feasibility Report –Environmental Impact Statement
General and Specific Section 404 CWA Comments

GENERAL COMMENTS

Comment: The DEIS states that Authorization for the study is derived from a resolution from the Committee on Environmental and Public Works dated June 23, 2004, entitled "Coastal Texas Protection and Restoration Study". However, the proposed project, as described in this DEIS, does not appear to be consistent with the Senate resolution.

> ***Recommendation:*** We recommend that the COE verify in the FEIS the actual authority for the proposed project.

Comment: The purpose of the project does not seem to have been clearly conveyed by the report. In a number of locations, and in a number of ways, the report seems unclear of whether or not it is actually the purpose of the proposed project to conduct ecosystem restoration activities. The title of the project itself is a source of the confusion. If ecosystem restoration is not actually a purpose of the proposed project, this raises questions regarding whether the project is consistent with the Senate resolution that is cited as a key driver of the project.

> ***Recommendation:*** Please clarify whether ecosystem restoration is a purpose of the project, or not and revise the title of the project and at numerous locations within the report, accordingly.

Comment: The Draft EIS is not clear whether part of the purpose of the project is to provide additional coastal storm risk management in the Galveston Bay system. This is clearly discussed in the document, but then seems to have been deferred into the future, or some other program.

***Recommendation*:** Please clarify whether part of this project's purpose is to provide additional coastal storm risk management in the Galveston Bay system and clarify whether there will be opportunities in the future to review and comment on storm risk management features for the Galveston Bay system in the future.

Comment: It appears that the COE did not use "environmental impacts" or "environmental benefits" as criteria in their elaborate alternatives analysis.

> ***Recommendation:*** We suggest revision of the alternatives analysis to include "environmental impacts" as an explicit criterion.

Comment: With regard to wetland impacts, we noted that efforts to avoid and minimize impacts to aquatic resources are only generally described.

> ***Recommendation:*** The FEIS should describe efforts taken to avoid and minimize impacts to aquatic resources in detail. Please provide maps showing details of alternative levee segments that were revised to avoid and minimize impacts to aquatic resources.

Comment: While there is some discussion of the potential negative secondary impacts of the proposed gates on fisheries functions of tidal wetlands "inside" the proposed gates, there is no discussion regarding the potential for similar effects to other ecological functions of these wetlands. For example, what impacts would the gates have on the exchanges of sediment, nutrients, and organic matter between wetlands "inside" the gates and wetlands and estuaries "outside" the gates? The report explains that modeling indicates that the gates should not change the patterns of water exchange, so this might answer our question. However, there is no mention of this potential concern at all. Under the circumstances, the potential for such an effect must be acknowledged, and the results of a preliminary assessment of the risk of effects should be presented. We acknowledge that if water exchanges are not affected, that it is possible that exchanges of sediment, nutrients, and organic matter may not be affected either. If that is the case though, the report should also explain why there is a legitimate concern for fisheries access. Note that the WVA "Fish Access" variable is deemed to include not just fish access, but also effects on the exchanges of sediment, nutrients, and organic matter, so if there is a need to quantify effects of gates on the latter, the WVA analysis should already address this.

> ***Recommendation:*** Please include in the FEIS an analysis and discussion of the potential impacts of the gates on the exchange of sediment, nutrients, and organic matter, between wetlands "inside" the gates, and wetlands and estuaries "outside" the gates.

Comment: Similar to the comment above, there is little discussion of the potential for impacts to ecological functions of wetlands "inside", as well as "outside" the levees, due to the physical effects of the levees and culverts. Because of the spatial scale and locations of the proposed levees, there would appear to be potential effects of the levees on wetlands "inside" and "outside." The levees would seem to restrict or block water flow in either direction, altering wetland and coastal stream hydrology, and thus wetland and stream ecology, as well as other ecological functions related to connectivity with adjacent ecosystems, including fish access and sediment, nutrient, and organic matter exchanges. By committing to install culverts to facilitate continued channelized flows between wetlands and streams "inside" the levees, and wetlands, streams, and estuaries "outside" the levees, the COE may have reduced or eliminated these concerns. However, discussion of these issues, and presentation of evidence in support of a finding of no effect, is lacking.

> ***Recommendation:*** Please expand the discussion of these concerns and explain in detail why levees will not have these impacts. The FEIS should explain why the proposed culverts will be sufficient to maintain existing hydrology and ecological functions.

Please provided modeling results to support a conclusion of "no effect". The arguments to the contrary should be correspondingly robust. Provide a clear, enforceable commitment to keeping the gates open when they do not need to be closed to control storm surge. Provide a similar commitment to maintain flow through the many culverts that will be required through the levee to maintain drainage and ecological connectivity.

Comment: A draft wetland mitigation plan has not been provided for review and comment. The COE has apparently had discussions with some of the other agencies regarding potential mitigation, but discussions with EPA regarding mitigation have been limited. EPA is aware that the COE is considering mitigating for unavoidable project impacts by a combination of marsh creation and "preservation only" of forested wetlands. EPA generally does not support mitigation through "preservation only." While "preservation" is listed in the mitigation rule as an option, it is the lowest priority, and thus the least desirable option. Finally, while marsh creation may be an acceptable approach to providing required compensatory mitigation, there are a number of important issues associated with it, including:

- the source of the sediment
- the quality of the sediment
- land loss rates at the proposed mitigation site and at the impact sites
- marsh design criteria including target elevation, settlement rate, and containment

Recommendation: EPA asks that the COE provide opportunities for agencies, including EPA, to discuss potential mitigation. Following such discussions, we recommend the COE draft a mitigation plan and provide it for review and comment by EPA and other agencies, prior to release of a FEIS.

Comment: Due to the location of the proposed project, and its scale, the risk for the project to disturb contaminated soils may be greater than acknowledged in the DEIS.

Recommendation: The COE should provide in the FEIS a more detailed assessment of the risk of the proposed project to disturb contaminated soils, and provide the draft report to agencies for review and comment.

SPECIFIC COMMENTS

Executive Summary

p. ES-3; Planning Objectives; 1st bullet:
Comment: This planning objective was "to reduce economic damages to business, residents, and infrastructure for the Sabine and Brazoria region for the 50-year period of analysis". It doesn't limit consideration to economic damages due to storm surge.

Recommendation: EPA suggest the COE revise the planning objective to specify that it is limited to reducing economic damages due to storm surge

p. ES-4; Planning Objectives; 2nd to last paragraph; 1st sentence:
Comment: According to the DEIS, environmental policies require that fish and wildlife resource conservation be given equal consideration with other study purposes in the formulation and evaluation of alternative plans. However, it is not clear what environmental policies this refers to; nor is it clear that they explicitly require that fish and wildlife resource conservation be given equal consideration. Is the term "fish and wildlife resource conservation" explicitly used in these policies? "Fish and wildlife resource conservation" is a subset of more general environmental protection. Note also that neither "fish and wildlife resource conservation" or "environmental impacts" (see comment above) were apparently included as criteria in the alternatives analysis.

Recommendation: Please clarify what policies the DEIS refers to and whether the policies explicitly state "fish and wildlife resource conservation". The FEIS should clarify whether or not "fish and wildlife resource conservation" was a criterion in the alternatives analysis.

p. ES-4; Planning Objectives; 2nd to last paragraph; 2nd sentence:
Comment: The statement doesn't indicate what risks to what valued resources the EIS is referring to.

Recommendation: Please clarify what resources are of concern. Human infrastructure? Wetlands?

p. ES-4; Planning Objectives; 2nd to last paragraph; 3rd sentence:
Comment: EPA has not seen a mitigation plan nor have we been consulted with on mitigation.

Recommendation: See previous related general comment. If a draft mitigation plan exists, as stated, please provide EPA an opportunity to review and comment prior to the release of the FEIS.

p. ES-4; Planning Objectives; 2nd to last paragraph; 4th sentence:
Comment: No mitigation cost estimate has been provided. If mitigation plans are not yet available it would be difficult to estimate their cost. Mitigation cost could be a significant factor in the project cost estimate, and therefore, in the project decision.

Recommendation: Please provide the mitigation cost estimate that was used in the project cost estimate, and provide a detailed explanation of the basis for it.

p. ES-4; Formulation of Alternative Plans; 1st paragraph; 2nd sentence:
Comment: What is meant by the reference to "conservation areas"? What are these in relation to this proposed project?

Recommendation: Please clarify what is meant by "conservation areas" in this statement.

p. ES-5; Formulation of Alternative Plans; 2nd complete paragraph; 3rd sentence:
Comment: Why was the criterion "environmental impacts" only used qualitatively? The lack of detailed description of how this criterion was used, and what its effects were, makes it difficult to tell if environmental impacts were fully considered as part of the alternatives analysis.

> ***Recommendation:*** Please explain why the criterion was only used qualitatively. Describe in detail how the criterion was used and what its effects where on the alternatives analysis.

p. ES-5; Formulation of Alternative Plans; 3rd complete paragraph; 2nd sentence:
Comment: It is unclear how the "Gate" and "No Gate" alternatives in the Sabine Region did not provide different degrees of environmental impacts. Intuitively, it would seem obvious that the "Gate" alternative would produce more environmental impacts than the "No Gate" alternative. Other than this paragraph, we did not find detailed discussion of this question.

> ***Recommendation:*** We recommend the COE discuss in detail the environmental effects of the "Gate" alternative, and compare them to those of the "No Gate" alternative. As part of this, the specific details of what "the gate" would consist of, and where it would be located, should be provided.

p. ES-7; Final Array Evaluation Results; 1st paragraph; 2nd to last sentence:
Comment: The COE states that the only criterion used in the final selection of the tentatively selected plan (TSP) is economics. We assume that means cost. So, environmental impacts are not a criterion in the selection? How does this allow compliance with the 404(b)(1) Guidelines? How is avoidance and minimization of impacts to wetlands assured? How does this approach ensure that unavoidable impacts to wetlands are fully compensated?

> ***Recommendation:*** Discuss the process used to select the TSP in greater detail in the FEIS. Address the questions and comments above, particularly the possibility that this approach may not be consistent with the 404(b)(1) Guidelines.

p. ES-8; Final Array Evaluation Results; 1st incomplete paragraph; last sentence:
Comment: Does the Fish and Wildlife Coordination Act require coordination with EPA? Doesn't NEPA require it? Will coordination be limited to fish and wildlife agencies?

> ***Recommendation:*** Please revise this statement based on answers to the above questions.

p. 1-1; 1.2.1 General Authority:
Comment: The DEIS states that Authorization for the study is derived from a resolution from the Committee on Environmental and Public Works dated June 23, 2004, entitled "Coastal Texas

Protection and Restoration Study". However, the proposed project, as described in this DEIS, does not appear consistent with the Senate resolution.

> ***Recommendation:*** We recommend that the COE cite the actual authority for the proposed project.

p.1-2; 1.3 Study Purpose and Scope; 2nd paragraph:
Comment: The DEIS states that in the exemption approval, it was agreed that this report would present a programmatic overview of coastal storm risk management problems and opportunities and a programmatic assessment of ecosystem restoration opportunities for the entire six county study area.

> ***Recommendation:*** Please clarify in the FEIS the actual authorities and approvals that support and guided this project.

p.1-3, 1-4, 1-5; 1.5 Study Area & 1.6 Project Area:
Comment: Similar to the situation with the project purpose, the DEIS describes "study area" and "project area" in a confusing manner. The explanation given is extremely difficult to follow. First, the document should be very clear regarding the difference between "study area" and "project area." Similar to project purpose, apparently the project has evolved from one that applied in a six county area, to one that applies to only a three county area. The reasons that three counties were eliminated is not clear. So, the project evolved from one that addressed both storm impacts and ecosystem restoration in a six county area, to one that addresses only storm impacts in a three county area. The exact alternative evaluation process that resulted in this needs to be clearly explained.

> ***Recommendation:*** Please explain the difference between study area and project area. Simplify and clarify that the project really only addresses three counties. Explain in detail clearly how the project evolved from one that addresses six counties, to one that addresses three counties.

p. 1-5; 1.8 Major Historical Surge Events in the Study Area; 3rd paragraph; 1st sentence:
Comment: We are not aware of a Morgan City, Texas.

> ***Recommendation:*** Please confirm this is not an error.

p. 1-8, 1-9; 1.10.2 Navigation Projects in the Study Area:
Comment: Given the likely relationship between the navigation channels and storm surge, it would seem to be necessary to discuss this.

> ***Recommendation*:** Please explain the impacts of the enlargements in the geometry of the connection between Sabine Lake and the Gulf of Mexico and the storm surge.

p. 2-1; Physical Description of the Existing Area:

Comment: Is the "existing area" the "study area", or the "project area" or both?

Recommendation: Please change the title to be consistent with the EIS's other uses of the terms "study area" and "project area".

p. 2-1; Table 2-1:
Comment: Rather than "tide ranges" do you mean "water surface elevation ranges"? Changes in water surface elevation along the Gulf coast are not all due to tides.

Recommendation: Please revise the title of the table to clarify what it represents.

p. 2-1; last paragraph:
Comment: See above comment. This discussion appears to use various forms of the term "tide" when discussing variations in water level.

Recommendation: Please revise this paragraph to clarify the discussion is about "water surface elevation" or "water level" rather than "tide" explicitly.

p. 2-5; 2.2.2 Currents and Circulation; 1st sentence:
Comment: This statement appears to be inaccurate. There are two estuaries in this project area: Sabine Lake and Galveston Bay. The Sabine and Neches Rivers discharge into Sabine Lake. The Trinity and San Jacinto Rivers discharge into Galveston Bay. The Brazos River discharges directly to the Gulf of Mexico near Freeport.

Recommendation: Please edit the statement similar to clarify.

p. 2-5; 2.2.1 Sabine Lake System; 1st paragraph; 1st sentence:
Comment: This section is entitled "Sabine Lake System," but the first thing that is stated is something about "the Sabine Region". "Sabine Lake System" seems more appropriate than "Sabine Region," but "Sabine Lake Estuary" would be more accurate.

Recommendation: Please change the section title to "Sabine Lake Estuary". Change 1st sentence to refer to "Sabine Lake Estuary".

p. 2-5; 2.2.2.2 The Galveston Bay System:
Comment: Similar to above, the term "Galveston Bay Estuary" would seem to be a more precise term.

Recommendation: Please change the section title to "Galveston Bay Estuary".

p. 2-5; 2.2.2.2 The Galveston Bay System; 1st paragraph; 1st sentence:
Comment: The San Jacinto actually runs from its headwaters in Montgomery, Grimes, Waller, Harris, and Liberty Counties, to Lake Conroe, then to Lake Houston, and from Lake Houston to Galveston Bay.

Recommendation: Revise the statement to acknowledge that the San Jacinto River begins upstream of Lake Houston.

p. 2-6; 2nd paragraph; last sentence:
Comment: It isn't clear why this statement was provided.

Recommendation: We suggest you either remove the statement or explain in the EIS, why it is included.

p. 2-6; 2.2.3 Brazos River System; 2nd sentence:
Comment: While this statement may be technically correct, depending on which statistic you use to define "the river with the greatest discharge", on the face of it, it doesn't appear to be correct. The Sabine River has the highest median discharge of any river in Texas. Based on median discharge, the Brazos River has the third largest discharge of all Texas rivers.

Recommendation: Please clarify the comparison being made among Texas rivers. Specify which flow statistic the statement is based on. Intuitively, we would not tend to agree that the Brazos River has the greatest discharge of any river in Texas.

p. 2-6; 2.2.2.4 GIWW:
Comment: Using this acronym as a title does not seem like the best approach. In addition, the GIWW is significant to this project, so this section should have much more information about it.

***Recommendation*:** Spell out the acronym in the title. Add more basic information regarding the GIWW to this section. What are the dimensions of the channel? How much water moves through it? Note also that the GIWW intercepts some of the freshwater flow and runoff from uplands towards the coast, leaving wetlands and estuaries on the seaward side of the GIWW cut off from freshwater input. Comment on the potential for the GIWW to convey storm surge.

p. 2-7; 2.3.1 Description of the Ecological Region:
Comment: This section needs more discussion of the ecological differences between the Sabine Lake ecosystem and the Brazos River Delta ecosystem. For starters, there should be a mention that the coastal ecosystem from Bolivar to Sabine Pass is part of the Chenier Plain, and there needs to be a discussion of what the Chenier Plain is. There needs to be a discussion of how these ecosystems have been changed already by man- especially the effects of the removal of the bar at Sabine Pass (oyster reef?) and the rerouting of the Brazos River, which was a huge change to the Brazos River Delta area.

Recommendation: Please revise this section to address the above comments.

p. 2-7; 2.3.1 Description of the Ecological Region; 1st paragraph; 1st sentence:
Comment: This appears to be based on an older ecological landscape classification.

Recommendation: Use a more modern classification. EPA suggests the classification in Griffith et al. 2004 which is the classification that is used by Galveston District Interagency Review Team (IRT). The appropriate ecoregion for this area based on that classification is Western Gulf Coastal Plain.

p. 2-7; 2.3.1 Description of the Ecological Region; 1st paragraph; 2nd sentence:
Comment: This discussion of coastal wetlands needs some revision:1) tidal and fresh are not mutually exclusive; 2) tidal influence here is small, and diminishes inland; 3) we recommend not classifying Texas wetlands based on tide; 4) we recommend classifying wetlands based on marsh type: salt marsh, brackish marsh, intermediate marsh, fresh marsh, cypress-tupelo swamp, etc. "Forest riparian" may not be the best term to use in this case. We question the appropriateness of the term "woodlot" as an ecological term in the project area.

***Recommendation*:** Please revise this section to address comments above. Consider changing "forest riparian" to "riparian forest". Change "woodlot" to an ecologically appropriate term.

p. 2-7; 2.3.1 Description of the Ecological Region; 1st paragraph; 3rd sentence:
Comment: This is not the only function of these wetlands, nor even necessarily the most important. Why was this function singled out for discussion?

Recommendation: Please discuss other functions of these wetlands including flood storage, water quality maintenance, other wildlife, and fisheries benefits.

p. 2-7; 2.3.1 Description of the Ecological Region; 2nd paragraph; 1st sentence:
Comment: While this rainfall amount may be possible for a small area very near Sabine Lake, it does not seem accurate for most of the study area. The office of state climatologist recently published a precipitation map showing precipitation ranging from >54 in/yr near Beaumont-Port Arthur to 46-50 near Freeport.

Recommendation: Please revise the statement to be consistent with the data.

p. 2-7; 2.3.1 Description of the Ecological Region; 3rd paragraph; 1st sentence:
Comment: The Brazos Delta region is not defined.

***Recommendation*:** Please define and describe what is being referred to as the "Brazos delta region".

p. 2-7; 2.3.1 Description of the Ecological Region; 3rd paragraph; 2nd sentence:
Comment: What are the "rice prairies?" Is this an ecological term that has been used before?

***Recommendation*:** It would seem more appropriate to refer to them as agricultural croplands that were converted from the coastal prairie ecosystem. It would probably be

appropriate to mention that rice is cultivated on them, and that rice fields are a type of artificial wetlands that are attractive to waterfowl.

p. 2-7; 2.3.1 Description of the Ecological Region; 3rd paragraph; 4th sentence:
Comment: What area does this refer to? The entire Texas coast? The project area?

Recommendation: Please clarify the area referred to.

p. 2-8; 2.3.2 Storm surge effects on the Study Area; 1st paragraph; 6th sentence:
Comment: Is there a reference or other support for this conclusion?

Recommendation: Provide a reference or other evidence in support of this conclusion.

p. 2-8; 2.3.2 Storm surge effects on the Study Area; 2nd paragraph; 1st sentence:
Comment: Has consideration been given to whether this could be attributed to wetland impoundments trapping saltwater?

Recommendation: Please consider the question and revise the FEIS accordingly.

p. 2-8; 2.3.2 Storm surge effects on the Study Area; 2nd paragraph; 4th sentence:
Comment: Is there data to support this?

Recommendation: Please provide elevation data to support the conclusion that these marshes are concave in shape.

p. 2-8; 2.3.2 Storm surge effects on the Study Area; 2nd paragraph; 5th sentence:
Comment: In addition to this list of drainage impairments, was there consideration to the likely effects of intentional and accidental marsh impoundments in slowing drainage of saline water after hurricanes?

Recommendation: Add impoundments to the list of drainage impairments.

p. 2-8; 2.3.2 Storm surge effects on the Study Area; 2nd paragraph; 6th sentence:
Comment: See above comment. This observation may well be due at least in part, to the existence of large wetland impoundments.

***Recommendation*:** Revise the report to acknowledge the possible role of impoundments in slowing drainage of saltwater after hurricanes.

p. 2-8; 2.3.2 Storm surge effects on the Study Area; 2nd paragraph; last sentence:
Comment: Were studies documenting these effects actually conducted, or are these hypotheses? Admittedly, these would seem to be plausible potential effects of extended exposure of brackish or less saline wetlands to high salinity water. It would seem important to note however, that the

extended exposure seems likely to be due to drainage impairments, such as impoundments, rather than the hurricane per se.

Recommendations: Please address the above questions and comments in the FEIS.

p. 2-9; 2.3.3 Attenuation of Storm Surge Impacts by Coastal Wetlands:
Comment: Although the conclusion may seem plausible the discussion is reliant on just two papers.

Recommendation: Use the findings of additional papers to support the argument. There are several other significant papers on the subject: Costanza et al. 2008, Wamsley et al. 2010, Gedan et al. 2011, Barbier et al. 2013.

Comment: Subsidence is the reason for the loss of these wetlands White et al. (1987). Saltwater intrusion was really not a problem until after the wetland system had been highly degraded.

Recommendation: Use the description regarding wetland loss in this area from White et al. (1987): Submerged Lands of Texas, Beaumont-Port Arthur Area: Sediments, Geochemistry, Benthic Macroinvertebrates, and Associated Wetlands, by W. A. White, T. R. Calnan, R. A. Morton, R. S. Kimble, T. G. Littleton, J. H. McGowen, H. S. Nance, and others. 110 p., 67 figs., 16 tables, 6 oversize color plates, 3 appendices, 1987. Historic wetland loss here has been attributed primarily to factors other than saltwater intrusion.

p. 2-11; 4th complete paragraph; 2nd sentence:
Comment: It is not clear what the significance of the boardwalk is to this DEIS.

Recommendation: Please clarify the intent or remove the comment regarding the boardwalk.

p. 2-14; 2.3.5 Physical and Hydrological Characteristics of the Study Area:
Comment: There is a similar section with a similar title earlier in the report.

Recommendation: Please review the organization of the document and ensure there is not redundant sections.

p. 2-14; 2.3.5 Physical and Hydrological Characteristics of the Study Area; 1st paragraph; 1st sentence:
Comment: This appears to be based on an older ecological landscape classification.

Recommendation: Use a more modern classification. We suggest Griffith et al. 2004. This is the classification that is used by the Galveston IRT. The appropriate ecoregion for this area based on that classification is Western Gulf Coastal Plain.

p. 2-15; 1st incomplete paragraph; last sentence:
Comment: These coastal streams are not tributaries to the water bodies discussed immediately prior to this. They are tributaries to the bay however.

Recommendation: Please clarify what these streams are tributaries to.

p. 2-15; 3rd paragraph; 1st sentence:
Comment: This sentence refers to the "intercontinental shelf." We assume it should refer to the "continental shelf".

Recommendation: Please change "intercontinental" to "continental".

p. 2-15; 2.3.6 Biological Communities in the Study Area:
Comment: Was it actually intended to specifically refer to the "study area," rather than the "project area"? See earlier comment on this subject. This section is in need of maps to show where the communities discussed are located.

Recommendation: Please review the title of this section to ensure that "study area" is actually intended rather than "project area." Add maps to the section.

p. 2-16; 2.3.6.2; Coastal Marshes; 1st sentence:
Comment: Clarify what is meant by "Gulf shoreline." Few, if any locations along the actual Gulf shoreline on the upper Texas coast are vegetated. These shorelines typically include a beach and small dunes, with brackish marsh behind them.

Recommendation: Please clarify, or correct this statement.

p. 2-16; 2.3.6.2; Coastal Marshes; 6th sentence:
Comment: Intermediate marsh optimum salinity is 0.5-2.5 parts per thousand (ppt), so if these marshes are actually experiencing these salinities they are stressed. What is the basis for this statement? Is the COE sure these are intermediate marshes rather than brackish?

Recommendation: Please clarify whether these wetlands are actually intermediate marsh and whether the stated salinities are based on actual data. After this, if the statements are deemed to be correct, one must conclude that these marshes are experiencing significant salt stress.

p. 2-17; 1st complete paragraph:
Comment: Is the term "woodlot" an ecologically appropriate term? Isn't there some more correct ecological term for these habitats?

Recommendation: Confirm that "woodlot" is an ecologically appropriate term for the habitats it is used to identify. If not, replace the term with an appropriate term.

p. 2-17; 2.3.6.4 Aquatic Habitats:
Comment: Wetlands are aquatic habitats. So is open water and so are beaches and tidal flats and submerged aquatic vegetation (SAV). If the intent was to talk about open water here, why did it include beaches and tidal flats? We recommend the discussion of each aquatic habitat type separately, and make this section about open water habitat only. Alternately, this could be referred to "Other aquatic habitats" and add SAVs to the discussion.

Recommendation: Please revise the FEIS to address the above comment.

p. 2-17; 2.3.6.4 Aquatic Habitats; 1st paragraph; 2nd sentence:
Comment: While not insignificant, we would not consider these areas "large estuarine aquatic habitats".

Recommendation: Remove the reference to Chocolate Bayou and the San Bernard River Delta from this statement. A separate statement could be included that more accurately characterizes the limited extent of estuarine ecosystems associated with these two streams.

p. 2-19; 2.3.9 Water and Sediment Quality:
Comment: EPA does not agree with the overall characterization of water and sediment quality in the project area. The discussion is also overly brief.

Recommendation: We believe revisions to this section are needed. Include all 303(d) listings. There are numerous segments in the study area that are not meeting water quality standards. Fifty-five segments in the project area are listed on the draft 2014 303(d) list as not meeting water quality standards. There are several Superfund sites, a number of fish consumption advisories, etc. The National Estuary Program Coastal Condition Report (2007) considered Galveston Bay water and sediment quality to be fair to poor. Acknowledge that some dredged material testing and other sediment testing, has shown that some sediment contains significant contamination.

p. 3-7; 3.2 Economic Conditions; 3rd sentence:
Comment: Where are these ecosystem restoration measures?

Recommendation: Please revise the EIS so that it isn't so difficult to locate information about the ecosystem restoration measures. It doesn't appear that there is any ecosystem restoration. If that is the case, explain that clearly and revise the document, including the title to make that clear.

p. 3-13, 3-14; Environmental Conditions; 1st – 2nd paragraph;
Comment: Although EPA is in agreement on the general point being made we do disagree with some of the specifics of the argument. First, Williams et al. (2009) state that "salt stress from interference with freshwater flows has put in jeopardy the process by which marsh sediment accretion and land accumulation occurs". While upstream reservoirs have undoubtedly reduced

sediment input into Sabine Lake and Galveston Bay, and to some of their wetlands, the amount of freshwater input has not declined. The seasonality of freshwater inflows has been shifted by reservoir operations, however.

While the reduced sediment supply is clearly a concern for wetlands, we would argue that alteration of freshwater inflows has not caused any increases in salinity in *these* systems *yet*, except perhaps seasonal shifts. On the other hand, the Sabine-Neches Waterway has had a major effect on salinity in the Sabine Lake system, and the Houston Ship Channel has had a major effect on salinity in Galveston Bay. Salinity increases due to these channels may have affected accretion by decreasing plant production of organic matter.

However, we feel that factors other than salinity increases, have also been important as causes of loss of wetlands in these estuaries in the past. Some of the wetland loss here has clearly been explained as perhaps having been due to subsidence and faulting due to subsurface fluid withdrawal. It is also highly likely that impoundment of coastal wetlands has been a more important factor in reducing sediment inputs to these wetlands, than has the decrease in sediment input to Sabine Lake due to reservoir effects. Impoundment of wetlands severely reduces opportunities for external sediment input to the wetlands. It also reduces nutrient inputs, which affects plant growth and organic matter production, which may in turn reduce accretion. Wetland impoundments may also serve to trap high salinity water on the marshes after hurricanes, for longer periods of time than would be the case without impoundment. This may result in extended periods of marsh exposure to high salinity water, decreased vegetative productivity, and in some cases, death of marsh plants.

> ***Recommendation***: Please revise this section to either reduce the impact of Williams et al. (2009), or better put their conclusions and recommendations into context. Please eliminate suggestions that altered freshwater inflow has, as of yet, been a major factor in wetland changes, loss, or reduced productivity. There should be acknowledgement of the role that the Sabine-Neches Waterway and the Houston Ship Channel, have played in increasing salinity in Sabine Lake and Galveston Bay, and acknowledgement that these changes have affected the types of wetlands in the Sabine Lake area, and possibly the Galveston Bay area as well, and that these changes probably have reduced plant productivity in the Sabine Lake area, and possibly Galveston Bay as well. Acknowledgement should also be made to the likelihood that wetland impoundment has probably had on marsh accretion than has altered freshwater inflow, at least so far. And finally, acknowledge the role of subsurface fluid withdrawal-specifically oil and gas and groundwater have had on wetland losses in the Sabine Lake and Galveston Bay area.

p. 3-14; Environmental Conditions; last paragraph:
Comment: Where is "along the Gulf shoreline?" If what is meant is directly on the Gulf, they are mostly being lost due to erosion, which is normally a natural process. In this area though it is expected that it is mostly due to sand deprivation due to the effects of the Sabine jetties. Subsidence and sea level rise play roles generally, and in specific hot spots, but on the Gulf shore wetland loss is mainly due to erosion. Saltwater did not come "from the beach." It came from

the Gulf of Mexico. The wetlands that were, and are, affected by Hurricane Ike along the Gulf shoreline are probably not freshwater marshes. Some are salt marsh, most are brackish. Those behind them may be affected too though, these are intermediate. Fresh marsh was historically found landward of the GIWW, but much of this has probably converted to brackish marsh. The pathway for saltwater intrusion on the landward side of the GIWW, may not be directly from the gulf however.

> ***Recommendation:*** Please revise statements on Bessie Heights to acknowledge that the actual future wetland losses here are limited due to the fact that there are few wetlands left. Also clarify the comments about wetlands "along the Gulf shoreline." Describe the process of marsh loss here more accurately, and acknowledge the major role played by the Sabine jetties. Clarify that saltwater didn't come from the beach. Clarify that it wasn't freshwater marshes that were impacted by the impacts of Ike on the beach.

p. 3-14, 3-15; 3.4 Life Safety; 5th sentence:
Comment: Why wasn't a risk assessment done? It appears that threats posed by storm surge due to tropical storms, to human life and safety, are one of the two primary purposes for proposing this project.

> ***Recommendation:*** Perform the risk assessment, or explain in detail why it isn't necessary, keeping in mind that these risks are a primary reason for this project.

p. 4-1; 4.1 Problems and Opportunities; 3rd paragraph:
Comment: This paragraph attempts to explain the most confusing aspect of this project, i.e., why no ecosystem restoration is discussed, and why Galveston Bay is not discussed. However, it is still unclear why this is the case. Section 1.3 does not explain this well either.

> ***Recommendation:*** The source of authority for the project is still unclear. The fact that there is no ecosystem restoration is unclear. The fact that Galveston Bay was part of it, and then was not, also is unclear.

p. 4-2; P3:
Comment: It is not clear how the proposed project would address this.

> ***Recommendation:*** Please explain how the proposed project might help with this risk.

p. 4-2; P4; last sentence:
Comment: This appears to be circular reasoning: If the…marshes disappear, saltwater inundation will result in the death of marsh vegetation and the conversion of marsh to open water, eliminating the protective buffer.

> ***Recommendation:*** Please clarify or delete this statement.

p. 4-2; P6:
Comment: Human modifications have affected the sand supply, including construction of jetties at the passes, deep navigation channels that become sand traps, and reservoirs in the watersheds.

> ***Recommendation:*** There appears to be the need to acknowledge that the sand deficit is partly due to human modifications, specifically jetties, navigation channels, and reservoirs (Anderson 2007).

p. 4-2; 4.1.2 Opportunity Statements:
Comment: The only environmental protection or restoration statements are:

- Enhance or restore endangered species habitat;
- Reduce environmental damage associated with storm damage to refinery infrastructure;
- Avoid or mitigate adverse natural resource impacts;

Part of the purpose of the project is to include environmental restoration.

> ***Recommendation:*** If it is part of the purpose of the project to include environmental restoration, we would recommend consideration of the following opportunity statements (or replace the 3rd one above):
>
> - Restore wetlands
> - Restore barrier shoreline habitats (beach, dune, subpratidal)
>
> Restore cheniers (ridges)

p. 4-4; 2nd paragraph; 1st sentence:
Comment: What environmental policies require this? Do they specifically require "fish and wildlife resource conservation" or are the requirements for more broadly environmental?

> ***Recommendation:*** Please revise the DEIS accordingly.

p. 4-4; 2nd paragraph; 4th sentence:
Comment: What were the potential ER projects, where were they, and why were they eliminated?

> ***Recommendation:*** Address the above questions in the FEIS.

p. 5-2; 5.2 Management Measures; 2nd paragraph; 1st sentence:
Comment: This list doesn't address the problem of interruption of longshore transport of sediment by jetties and navigation channels. What specifically does "sediment management mean"?

Recommendation: We would recommend adding to this list: "Bypassing sediment around jetties and navigation channels." Define "sediment management".

p. 5-2; 5.2 Management Measures; 2nd paragraph; 4th sentence:
Comment: Why was such a small area of this shoreline identified? Virtually the entire shoreline from Sabine Pass to the western tip of the Bolivar Peninsula, would be expected to be in need of Gulf shoreline restoration.

Recommendation: If there is no opportunity to do this work, then please explain why a larger shoreline restoration wasn't contemplated. If there is an opportunity to do this work, then add a much larger shoreline restoration project for consideration.

p. 5-2; 5.2 Management Measures; 2nd paragraph; 5th sentence:
Comment: We thought that a sediment management plan for Galveston Bay already existed.

Recommendation: If a plan already exists, acknowledge that in the FEIS. If so, is there a need to update it? If a plan doesn't exist, please respond accordingly.

p. 5-2; 5.2 Management Measures; 2nd paragraph; 7th sentence:
Comment: This list doesn't include anything to try to address the problem of interruption of longshore transport of sediment by jetties and navigation channels.

Recommendation: We would recommend adding to this list: "Bypassing sediment around jetties and navigation channels."

p. 5-3; 1st complete paragraph; 6th sentence:
Comment: It is not clear that any of these measures have been carried forward, but note that we have significant concerns for many uses of water control structures in coastal wetlands and estuaries. Specific proposed projects need to be evaluated on a case-by-case basis, but in general we are unclear of their benefits and have concerns regarding possible negative impacts.

Recommendation: Clarify whether these measures were carried forward. If they were, acknowledge the expressed concerns and provide detailed information and evaluation of any such projects, for our review and comment.

p. 5-4; 5.3.1 Initial Array of Alternatives; 1st paragraph; 1st sentence:
Comment: EPA has not seen any comprehensive alternative plans for ecosystem restoration.

Recommendation: Please provide these comprehensive alternative plans for review and comment.

p. 5-4; 5.3.1 Initial Array of Alternatives; last paragraph; 2nd sentence:
Comment: It is not clear what is meant by "coastal barrier".

Recommendation:
Define what is meant by "coastal barrier".

p. 5-5; Table 5.2 Criteria for Screening Initial Array of Alternatives:
Comment: EPA would like to see the environmental benefits for the various alternatives.

***Recommendation*:** Please provide EPA with this information, and provide us an opportunity to review and comment.

p. 5-4; 5.3.1 Initial Array of Alternatives; 2nd paragraph; 3rd sentence:
Comment: Why weren't environmental impacts considered? If they were only considered as costs, based on mitigation cost, this would not seem to be compliant with the 404(b)(1) Guidelines, since avoidance and minimization of impacts to wetlands would not appear to have been taken into consideration.

Recommendation: Consider the comment and respond, including modification of the FEIS.

p. 5-6; Table 5-3: Evaluation Array of Alternatives; S8:
Comment: In the development of alternatives, why was the Sabine gate alternative the only one combined with ecosystem restoration? Why wasn't an alternative included that combined the inland barrier with ecosystem restoration?

Recommendation: Please reply to the questions in the FEIS.

p. 5-6; Table 5-3: Evaluation Array of Alternatives; S11:
Comment: What is a lone star type conservation plan?

Recommendation: Please explain in the FEIS what a lone star type conservation plan is.

p. 5-11; Economic Evaluation; 2nd, 4th sentences:
Comment: Mitigation requirements seem to have been limited to fish and wildlife mitigation only? What about other wetland functions? How were these costs estimated? What was the estimate? What were the conceptual mitigation plans? Note that EPA considers "preservation only" to be the least desirable form of mitigation. EPA has not reviewed any mitigation plans, including conceptual.

Recommendation: Please address the questions/comments by revising the FEIS, and by providing EPA a draft mitigation plan for review and comment prior to issuance of a FEIS.

p. 5-15; Economic Evaluation; 1st paragraph; 2nd sentence:
Comment: Why weren't environmental impacts and associated mitigation costs needed?

Recommendation: Please address the question in the FEIS.

p. 5-19; Economic Evaluation; 1st paragraph; 2nd sentence:
Comment: See comment immediately above.

Recommendation: See recommendation immediately above.

p. 5-19, 5-20; 5.4.2.5 Brazoria and Sabine Nonstructural:
Comment: This provided little detail regarding the argument that there are few buyout opportunities available. Expand on this argument. What is that conclusion based on?

Recommendation: Address the comment question in the FEIS.

p. 5-22; 2nd paragraph 4th sentence:
Comment: What is planning objective 3? Why was it eliminated? It is unclear why all ecosystem restoration was eliminated when the basis for authorization for the study is primarily about ecosystem restoration. How is this elimination consistent with arguments presented elsewhere in the document that environmental benefits must be considered? Note that avoidance, minimization and mitigation don't produce net environmental benefits.

Recommendation: Please respond to the questions and comments by revising the FEIS.

p. 5-25; 5.4.5 Selection of the Recommended Plan; 2nd paragraph; 1st sentence:
Comment: We recommend that this review include one or more expert, independent coastal geologists, wetland ecologists, estuarine ecologists, and an ecological economist.

Recommendation: Provide EPA with the findings of the external independent peer review.

p. 5-26; 1st complete paragraph; 1st sentence:
Comment: These don't appear to be net benefits because the analysis does not appear to include consideration of environmental costs, except as possibly identified through mitigation cost. EPA has not seen a mitigation cost estimate, nor a mitigation plan.

Recommendation: Please clarify whether this analysis includes consideration of environmental costs, if so, their basis. EPA would appreciate a draft mitigation plan for review and comment prior to issuance of the FEIS.

p. 5-27; 1st paragraph; last sentence:
Comment: Why didn't the cost/benefit analysis and the alternatives analysis identify this compelling argument then? This is an important point. If the argument is so compelling, the cost/benefit analysis and the alternatives analysis should have identified these as part of the preferred alternative. Please explain, in detail, why that is not the case in the FEIS.

***Recommendation*:** Please address the question by FEIS.

p. 5-27; 2nd paragraph; last sentence:
Comment: See above.

Recommendation: See above.

p. 5-30; 5.4.5.1 Selection of the Recommended Plan Summary:
Comment: Environmental impacts are not included.

Recommendation: Please discuss in this section the environmental impacts and what role they played in selection of the recommended plan.

p. 6-7; 4th sentence:
Comment: Indirect impacts are not limited to impacts to fish access. These impacts may also include impacts to other ecological functions related to ecological connectivity, including sediment, nutrient, and organic matter exchanges between wetlands inside the levee, and waters and wetlands outside the levee. The WVA variable that addresses fish access is described as accounting for all of these potential concerns.

Recommendation: Please clarify as per the above comment. Add a discussion of the other connectivity issues mentioned above.

p. 6-9; 3rd complete sentence:
Comment: We agree that there is reason to be concerned for potential risks of disturbance of contaminated soil. It is not clear that the draft HTRW report is sufficient to ensure that these risks are insignificant. EPA remains concerned that these risks have not been estimated with sufficient rigor to match the apparent potential risk. In at least one location, EPA is aware that risks have not been accurately identified: Star Lake Canal Superfund Site straddles the hurricane levee in Port Neches, TX. There is contamination in the Jefferson Canal adjacent to and south of the levee at the water control structure. EPA does acknowledge however, that the proposed protection would reduce the risk of hazardous spills from industrial and other facilities during and after storm surge events.

Recommendation: We recommend these risks be re-evaluated using a more robust approach, prior to the FEIS. The FEIS should acknowledge the existence of at least this one problem area, and commit to take the necessary steps to avoid disturbing it, or if unavoidable, propose acceptable means of dealing with it.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan:
Comment: Is this just a "fish and wildlife mitigation plan," or is it a conceptual draft plan for mitigation of unavoidable wetlands functional losses? Note that wetlands functional losses include considerably more than just fish and wildlife functions. If it is just a fish and wildlife mitigation plan, where is the wetlands mitigation plan?

Recommendation: Change the title and all language from "fish and wildlife mitigation plan" to "compensatory wetland mitigation plan." Ensure that all aspects of the required compensatory wetland mitigation plan reflect the need to compensate for lost wetland functions, rather than fish and wildlife only.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan; 1st paragraph; last sentence:
Comment: Where in the report are the discussions of avoidance and minimization measures?

Recommendation: Please ensure that there is actually a robust discussion of efforts undertaken to avoid and minimize impacts to wetlands.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan; 2nd paragraph; 1st sentence:
Comment: The forested wetlands that would be impacted are likely coastal forested wetlands. The other wetlands that would be impacted are coastal wetlands, but so are the forested wetlands. In addition, these other wetlands are "marsh," but EPA would not support aggregating them under this classification either. We recommend separating the impacts to cypress-tupelo swamp forest, bottomland hardwood swamp forest, brackish marsh, intermediate marsh, and fresh marsh, if any. Mitigation should be in-kind. Mitigation of one habitat type cannot compensate for loss of another.

Recommendation: The approach to classifying wetland impacts and wetland mitigation needs to maintain the distinctions between the various habitat types as mentioned above. Please revise the FEIS accordingly.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan; 2nd paragraph; 2nd sentence:
Comment: As previously mentioned, there doesn't appear to be any discussion of the efforts that were made to avoid and minimize impacts to wetlands.

Recommendation: Please add a discussion of efforts made to avoid and minimize impacts to wetlands.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan; 2nd paragraph; 8th sentence:
Comment: As previously mentioned, EPA does not support aggregating all marsh impacts under the classification of "coastal marsh." Impacts should be described by marsh type, and mitigation should be in-kind. As per the mitigation rule, acquisition and long term conservation are considered the lowest priority for mitigation. Thus, EPA does not support this approach to wetland mitigation except in rare cases, and as the rule mentions, then only with large ratio multipliers.

Recommendation: Please clarify the actual types of marsh that are impacted and to be mitigated for. The general proposal to mitigate via acquisition and long term conservation needs to be revisited. Please provide EPA a draft mitigation plan for review and comment prior to issuance of a FEIS.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan; 2nd paragraph; 9th, 10th sentences:
Comment: When will these mitigation discussion occur? EPA requests that they occur as soon as possible, and prior to issuance of the FEIS.

Recommendation: Begin mitigation discussions with the agencies, including EPA, soon. We request that the Corps not issue the FEIS until this coordination occurs, and until EPA has been provided a draft mitigation plan for review and comment.

p. 6-9; 6.1.3.2 Summary of Conceptual Fish and Wildlife Mitigation Plan; 2nd paragraph; last sentence:
Comment: Elsewhere in the document it says that a mitigation cost estimate had already been developed, although it is not clear what it would be based on.

Recommendation: Clarify whether a mitigation cost estimate already exists and was used in the cost/benefit analysis. If one doesn't exist explain how the cost/benefit analysis was conducted without it. If one does exist, explain why this sentence calls for one to be developed.

p. 6-10; 1st sentence:
Comment: Since it will likely take this project time to be implemented, it would seem to be desirable to maintain a future possibility of mitigating using mitigation banks, should any appropriate new banks become available prior to completion of the project.

Recommendation: EPA recommends that the mitigation bank option not be eliminated until much later in the project design/construction process.

p. 6-15 6.6.2 Environmental Quality (EQ):
Comment: It is not clear that the work done to assess the potential risk of disturbance of contaminated soils or hazardous materials, was sufficient, given the apparent potential risk.

Recommendation: We recommend these risks be re-evaluated using a more robust approach, prior to the issuance of the FEIS.

p. 6-19; 6.7.4 Environmental Data and Analyses; 1st paragraph; 2nd sentence:
Comment: While this may be a technically correct statement, it could be misleading in the Wetland Value Assessment "modeling" is a very simplistic wetland assessment "tool." The modeling is not simulation modeling. It is not based on much data. Further, it does not simulate

ecological processes. However, it does derive a "score".

Recommendation: Please replace the term "ecological modeling" with Wetland Value Assessment.

p. 6-19; 6.7.4 Environmental Data and Analyses; 1st paragraph; last sentence:
Comment: This should be discussed in some detail.

Recommendation: Please add a discussion of how engineering models were used to support part of the ecological analysis.

p. 6-19; 6.7.4 Environmental Data and Analyses; 2nd paragraph; last sentence:
Comment: Will there be an opportunity at that point to change designs (avoidance, minimization) or increase mitigation? Will other agencies have the opportunity to review?

Recommendation: Please address the above questions/comments in the FEIS.

p. 6-19; 6.7.4 Environmental Data and Analyses; 3rd paragraph; 2nd sentence:
Comment: It is not clear that the work done to assess the potential risk of disturbance of contaminated soils or hazardous materials, was sufficient, given the apparent potential risk. In at least one location, it appears that risks have not been accurately identified: Star Lake Canal Superfund Site straddles the hurricane levee in Port Neches, TX. EPA is aware that there is contamination in the Jefferson Canal adjacent to and south of the levee at the water control structure.

Recommendation: We recommend these risks be re-evaluated using a more robust approach, prior to the FEIS. The FEIS should acknowledge the existence of at least this one problem area, and commit to take the necessary steps to avoid disturbing it, or if unavoidable, propose acceptable means of dealing with it.

p. 6-21; 6.8.2 Clean Water Act; 2nd sentence:
Comment: EPA would like to review the details of the Corps' determination.

Recommendation: Provide the Corps' determination that the proposed project would not result in water quality standards being violated, for review and comment.

p. 6-21; 6.8.2 Clean Water Act; 3rd sentence:
Comment: We recommend the details of how impacts to wetlands were avoided and minimized, be discussed in the FEIS.

Recommendation: Please revise the DEIS to include discussion of efforts undertaken to avoid and minimize impacts to wetlands.

p. 6-21; 6.8.2 Clean Water Act; 4th sentence:

Comment: The 404(b)(1) Guidelines do not limit the requirement for mitigation to those that are deemed by the project sponsor to be "significant."

> ***Recommendation***: Please remove the term "significant." Please provide to the EPA a draft mitigation plan for review and comment.

p. 6-21; 6.8.2 Clean Water Act; 2nd to last sentence:
Comment: While the least environmentally damaging practicable alternative may be identified, compliance with the 404(b)(1) Guidelines cannot yet be determined, since a draft mitigation plan has not been provided.

> ***Recommendation*:** Provide a draft mitigation plan for review and comment prior to issuance of the FEIS.

p. 6-24; 6.8.12 Executive Order 11990, Protection of Wetlands; 3rd sentence:
Comment: As previously mentioned, the DEIS should include discussion of efforts made to avoid and minimize impacts to wetlands.

Recommendation: Please add a discussion of efforts made to avoid and minimize impacts to wetlands.

p. 7-5; 7.2.1.1 Design Accommodations to Minimize Impacts; 1st paragraph; last sentence:
Comment: How is the COE sure that this incorporates all the needs without altering hydrology? In Figure 7-1, there appear to be far more than 13 culverts indicated, and this is just one part of the system.

> ***Recommendation:*** Please add additional explanation for the conclusion that only 13 culverts are needed to protect existing drainage, as well as associated coastal streams and wetlands, across the proposed levee system. Alternatively, propose additional culverts to more fully avoid impacts to drainage, coastal streams, and wetlands.

p. 7-5; 7.2.1.1 Design Accommodations to Minimize Impacts; 2nd paragraph; 1st sentence:
Comment: This design criterion does not seem to be particularly protective, either of drainage, or environmental functions.

> ***Recommendation:*** We recommend that a similar degree of conservatism be assumed in the design of these culverts, as is assumed for other aspects of the proposed project.

p. 7-5; 7.2.1.1 Design Accommodations to Minimize Impacts; 2nd paragraph; 3rd sentence:
Comment: Have environmental impacts been acknowledged and accounted for, for the effects of one-way flapgates? These will of course, impact fishery access, as well as impact any import of sediment to wetlands on the "inside" of the levee/flapgate.

Recommendation: Please review the DEIS to determine whether these impacts were accounted for. If not, revise the WVA to account for it.

p. 7-5; 7.2.1.1 Design Accommodations to Minimize Impacts; 3rd paragraph:
Comment: The proposal to create an artificial drainage system that fully replicates environmental functions, is interesting. EPA cannot determine whether this is realistic or not since no details have been provided.

Recommendation: Please provide details of this proposed artificial drainage network. At this stage of planning, even a conceptual diagram/explanation, would be useful. Please also provide opportunity for agency review/comment.

p. 7-6; 1st paragraph; last sentence:
Comment: In addition to monitoring wetland "extent and quality", wetland flooding duration and frequency should be monitored. In addition, the proposal to monitor wetland "extent and quality" is vague.

Recommendation: Please identify what indicators would be measured to monitor wetland "extent and quality." Add wetland hydrologic monitoring. Consult with the agencies, including EPA, regarding recommended monitoring. Develop a draft monitoring plan and provide opportunity for agency review and comment.

p. 7-6; 2nd paragraph; last sentence;
Comment: For this to be the case, wouldn't velocities have to increase? If so, wouldn't this affect fishery access?

Recommendation: Please clarify. Assuming that current velocities would increase, evaluate the potential impacts to fishery organisms that use these marshes.

p. 7-7; 7.2.1.2 Unavoidable Indirect Impacts; 1st paragraph; 1st sentence:
Comment: These efforts undertaken to minimize impacts need to be described in detail.

Recommendation: Describe, in detail, efforts to avoid and minimize impacts to wetlands.

p. 7-7; 7.2.1.2 Unavoidable Indirect Impacts; 2nd paragraph; 3rd sentence:
Comment: Does the anticipated lack of effect of the proposed project on water surface elevation, include no effect on variations in water surface elevation? In other words, is the determination just that the average water surface elevation won't change, or is it that there should be no differences with versus without the project, taking into account the full scope of water surface elevation variability? In addition to potential affects to vegetation, and since the document acknowledges some potential impacts to fish access, was any consideration given to potential effects on exchanges of sediment, nutrients, and organic matter? Presumably, if the

volumes of water that are expected to pass by the gates, and their directions, have not changed, then neither would the exchanges of sediment, nutrients, and organic matter.

Recommendation: Please address the above comments in the FEIS.

p. 7-7, 7-8; last incomplete paragraph on p. 7-7, 1st incomplete paragraph on p. 7-8:
Comment: Why couldn't minor adjustments of the proposed levee alignment be accomplished in order to avoid these losses?

Recommendation: Address the above question in the FEIS. Include a map showing these areas in the FEIS.

p. 7-8; 1st complete sentence:
Comment: EPA would like to see what areas these are.

Recommendation: Include a map in the FEIS that shows these areas. Explain why these impacts are not avoidable.

p. 7-8; 2nd complete sentence:
Comment: EPA would like to see what area this is. EPA would also like to review a more detailed explanation of why these impacts are unavoidable.

Recommendation: Include a map in the FEIS that shows these areas. Explain why these impacts are not avoidable.

p. 7-9; 1st complete paragraph; last sentence:
Comment: Why didn't the analysis use rates of relative sea level change from Freeport or vicinity?

Recommendation: Explain in the FEIS, why rates of relative sea level change for Freeport weren't used.

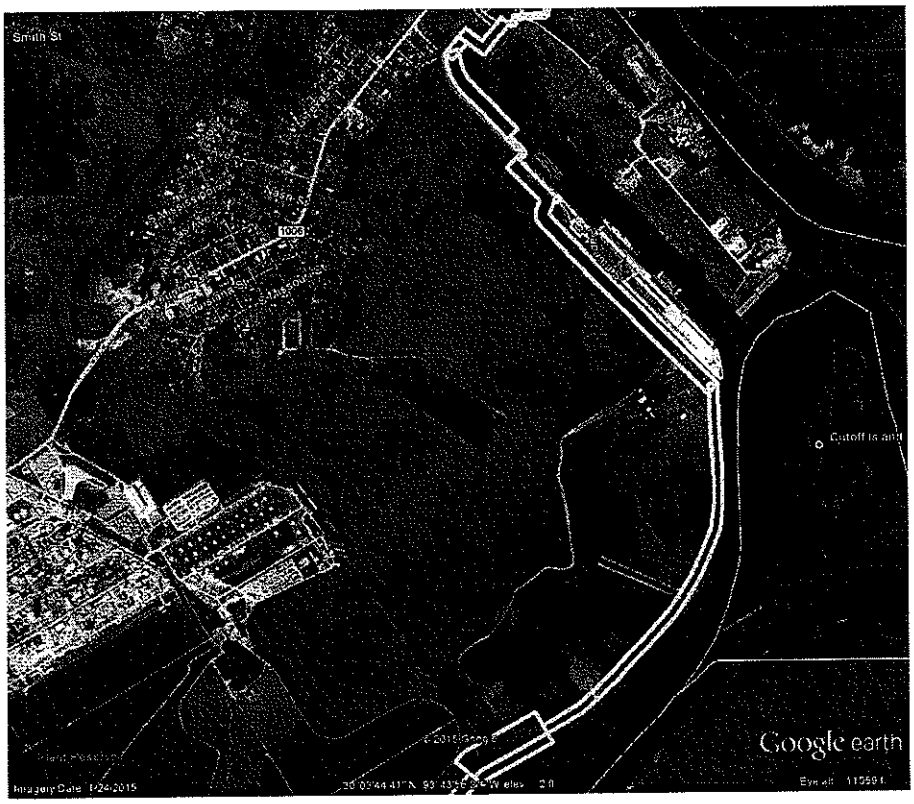
p. 7-10; 7.4.1 Orange-Jefferson CSRM Plan; 1st paragraph; 2nd sentence:
Comment: This seems not to acknowledge that losses in this area are now very low, since most of the wetlands have already been impacted. Subsidence and faulting may still be affecting the few remaining wetlands, and they may affect any created wetlands here in the future.

Recommendation: Include the above considerations in the discussion in the DEIS.

p. 7-10, 7-11; 7.4.1 Orange-Jefferson CSRM Plan:
Comment: While in general, the preferred alternative avoids and minimizes impacts to wetlands, there is one location where additional avoidance and minimization appears to be possible and desirable (see map below). This marsh is currently largely impounded by the existing dredged material placement area, a levee, a road, and upland/development. However, there is at least one

significant connection to the adjacent water via a canal on the northeast side where the road crosses over a bridge. It is not clear, but it appears the plans do not include provisions for a gate at this location. This would have the effect of impounding the northeast half of this marsh, in combination with existing internal spoil banks. The half of the marsh to the southwest of the internal spoil banks would appear to remain open to the channelized lower reach of Adams Bayou, which is proposed to be gated. Since the gate is proposed to remain open most of the time, this section of the marsh should not actually be impounded by the proposed project. However, there low spoil banks along the marsh's shoreline on Adams Bayou, which may serve to partly impound this section of the marsh. In addition to the "external" impounding features, the entire marsh appears to be internally impounded by a low levee. There is also a rectangular, open water impoundment in the center, and a road and other features associated with historic oil and gas activity. While this marsh is clearly degraded, it still has significant ecological value, and could be enhanced/restored.

Recommendation: Consider revisions to the proposed project features surrounding this marsh, as well as potential ecological enhancement/restoration, which would offset some of the project's required compensatory mitigation.



p. 7-12; 7.5.1 Orange-Jefferson CSRM Plan; 1st paragraph; last two sentences:
Comment: If the document is going to use this as an argument, provide specific examples and specific arguments. The argument presented is too general to base decisions on.

> ***Recommendation:*** We suggest that you either delete the discussion about unregulated losses, or provide a much more detailed discussion, including an evaluation of the actual potential for such unregulated losses in these areas.

p. 7-12; 7.5.1 Orange-Jefferson CSRM Plan; 3rd paragraph; 2nd sentence:
Comment: Why couldn't minor adjustments of the proposed levee alignment be accomplished in order to avoid these losses?

> ***Recommendation:*** Please address the above question in the FEIS. Include a map showing these areas in the FEIS.

p. 7-15; 1st complete paragraph; 3rd sentence:
Comment: EPA is not in agreement with this argument. This is true for most wetland losses and proposed development projects. Cumulative impacts often result in significant losses of wetlands.

> ***Recommendation:*** While the statement is accurate, the apparent implication is that the impacts are not significant, is not. Please add a statement that acknowledges that just

because the impacts are a small percentage of the total wetland area, does not indicate that the impacts are not significant.

p. 7-15; 1st complete paragraph; 4th sentence:
Comment: While it is correct that wildlife may be able to try to move into adjacent habitats, it is not a given that they will be able to do so. It is likely that adjacent habitats are already utilized by wildlife. Additional competition for the remaining habitat may result in a reduction in wildlife productivity. In addition, disturbance caused by project construction may reduce wildlife productivity temporarily.

Recommendation: The statement needs to recognize the potential impacts.

p. 7-15; 1st complete paragraph; 7th sentence:
Comment: Are bald eagles known to use these areas? In addition to the construction right of way, additional protective buffers surrounding it should be surveyed.

Recommendation: Address the above question in the FEIS. Commit to surveying, at a minimum, the additional buffer required by U.S. Fish and Wildlife Service, in addition to the construction right of way.

p. 7-15; 1st complete paragraph; last sentence:
Comment: This EIS acknowledges that fisheries access will be negatively impacted in some locations. See below. This statement should be consistent with the acknowledgments below. This statement is not consistent with the project's impacts on fisheries access. While these impacts are limited, they are not zero.

Recommendation: Ensure that the FEIS is consistent with respect to its acknowledgement of project impacts on fisheries access.

p. 7-15; 2nd complete paragraph; 1st sentence:
Comment: In addition to fisheries access, these gates might potentially impact the exchange of sediment, nutrients, and organic matter, with streams, wetlands, and estuaries "outside" the levees/gates. See other related comments on this subject.

Recommendation: Consider the above. Discuss analysis and conclusions of addressing this question, in appropriate locations in the FEIS.

p. 7-17; 1st paragraph:
Comment: A similar discussion is needed on the question of whether or not the proposed levee/gates may affect exchanges of sediment, nutrients, and organic matter. See above.

Recommendation: Add a discussion of these potential impacts to the FEIS, in appropriate locations.

p. 7-17; 7.6.1.2 Freeport and Vicinity CSRM Plan; 1st paragraph; 2nd sentence:
Comment: These terms usually don't apply to fish.

Recommendation: Please delete the word "fish" from this sentence.

p. 7-18; 7.6.2.1 Sabine Region CSRM Plans; 3rd paragraph; last sentence:
Comment: What is "CE/ICA Incremental Analysis"?

Recommendation: Please explain in the text what the above is.

p. 7-18; 7.6.2.1 Sabine Region CSRM Plans; 4th paragraph:
Comment: While it is the responsibility of NMFS to determine whether the COE's argument is valid, this does not appear to be a valid argument. First, how large is the area of hard bottom habitat? We would guess it is small. So, there's probably 8-10 ac of loss. Shouldn't this be mitigated? Note also that the COE is suggesting that hard-bottom habitat can replace soft-bottom habitat functions. EPA would not agree with that either. Finally, EPA is not sure that hard-bottom habitat is natural at this location.

Recommendation: Please delete the argument that hard-bottom habitat is a valid replacement for lost soft-bottom habitat.

p. 7-19; 1st complete paragraph; 3rd sentence:
Comment: Will the fish access loss specifically be fully replaced? This may require more acres of restored wetland than it takes just to produce the required number of AAHUs in general.

Recommendation: Please provide a draft mitigation plan for review and comment prior to issuance of a FEIS. Consider mitigation required to fully mitigate for the lost fish access function specifically, which may require more mitigation than if based solely on AAHUs in general.

p. 7-20; 7.6.3 Threatened and Endangered Species Impacts; 3rd paragraph; 1st sentence:
Comment: While it is the responsibility of the U.S. Fish and Wildlife Service, EPA ask that the COE accurately estimate the potential impact of the proposed project on the West Indian manatee.

Recommendation: Please consult with U.S. Fish and Wildlife Service and document this effort in the FEIS.

p. 7-21; 2nd complete paragraph; 1st sentence:
Comment: EPA would probably not agree that sediments in the "Sabine and Brazoria regions" are of good quality. While sediments from Sabine Lake generally are not as contaminated as one might expect based on the degree of industrialization there, they are contaminated to some extent. Generally though, these sediments do not exceed contaminant concentrations, i.e., benchmarks that are used to flag possible problems. That said however, there are some locations

where moderately or highly contaminated sediments have been found. In the "Brazoria Region" the quality of sediments are not well known. The potential for contaminated sediments would appear to be significant, given the degree of industrialization here, and the limited water volume for dilution. Little sediment data is available for this area. Also note that the mouth of the San Bernard River is outside the study area.

Recommendation: Aggregate all relevant sediment data and analyze data to determine:

- Whether or not any of the sediment is contaminated;
- If sediments are contaminated:
- What are the contaminants?
- What are the concentrations? What benchmarks do they exceed?
- What percentage of the data indicate contamination above benchmarks?
- Remove the reference to data from the mouth of the San Bernard River.

p. 7-21; 2nd complete paragraph; 6th sentence:
Comment: EPA does not agree that this argument justifies the conclusion that there is a low risk of encountering contaminated sediments in the Freeport area.

Recommendation: EPA recommends deleting this statement. EPA recommends assembling all available sediment data and analyzing it for contaminant concentrations and exceedances of benchmarks used to flag possible problems. In addition, due to the extensive industry in the area, EPA recommends sampling and analysis of sediments likely to be disturbed by the proposed project. Results should be provided to the agencies for review and comment, prior to construction.

p. 7-22; 7.7.2 FWP Alternatives for Sabine Region CSRM Plans; 1st paragraph; 5th sentence:
Comment: As repeatedly mentioned elsewhere in these comments, the DEIS includes little documentation of efforts taken to avoid and minimize impacts to wetlands.

Recommendation: As repeatedly recommended elsewhere in these comments, document efforts taken to avoid and minimize impacts to wetlands, in detail, somewhere in the FEIS.

P. 7-30; 7.10.1.1 No Action Alternative; 3rd paragraph; 3rd sentence:
Comment: As mentioned elsewhere in these comments, Star Lake Canal Superfund Site straddles the hurricane levee in Port Neches, TX. There is contamination in the Jefferson Canal adjacent to and south of the levee at the water control structure.

Recommendation: The FEIS should acknowledge the existence of at least this one problem area, and commit to take the necessary steps to avoid disturbing it, or if unavoidable, propose acceptable means of dealing with it.

p. 7-31; 7.10.1.2 FWP Alternative; 1st sentence:
Comment: EPA may not agree with this conclusion. Given the known concerns associated with the Star Lake Canal Superfund Site, as well as the apparent risks due to the intensive and extensive use of the landscape by the petrochemical industry, the risk of this project potentially disturbing contaminated soils would seem to be higher than this.

Recommendation: Undertake a more robust assessment of the risks of potentially disturbing contaminated sediment or make more conservative assumptions.

p. 7-32; 7.10.2.2 FWP Alternative; 3rd sentence:
Comment: Again, EPA may not agree with this conclusion. Given the known concerns associated with the Star Lake Canal Superfund Site, as well as the apparent risks due to the intensive and extensive use of the landscape by the petrochemical industry, the risk of this project potentially disturbing contaminated soils would seem to be higher than this.

Recommendation: Please undertake a more robust assessment of the risks of potentially disturbing contaminated sediment or make more conservative assumptions.

p. 7-33; 7.10.3.2 FWP Alternative; 1st sentence:
Comment: Again, EPA may not agree with this conclusion. Given the known concerns associated with the Star Lake Canal Superfund Site, as well as the apparent risks due to the intensive and extensive use of the landscape by the petrochemical industry, the risk of this project potentially disturbing contaminated soils would seem to be higher than this.

Recommendation: Undertake a more robust assessment of the risks of potentially disturbing contaminated sediment or make more conservative assumptions.

p. 7-41; #6:
Comment: Regarding the following statement: There are no remaining unmitigated adverse effects on natural and beneficial floodplain due to implementation of the Proposed Action.

Recommendation: Since EPA has not yet seen a draft mitigation plan, we cannot verify the above statement as accurate. EPA asks that a draft mitigation plan be included in the FEIS and be provided for review and comment prior to issuance of a FEIS.

p. 7-46; 7.16.1.3 Sabine Region Resource Impact Evaluation; 3rd paragraph; 1st sentence:
Comment: How has the navigation channel affected salinity through its effects on density currents?

Recommendation: Please discuss the role of the navigation channel in increasing the importance of density currents in Sabine Lake.

p. 7-46; 7.16.1.3 Sabine Region Resource Impact Evaluation; 3rd paragraph; 2nd sentence:
Comment: Subsidence is not responsible for just lost of forested wetlands, but for loss of marshes as well. Access canals may cause wetland loss not only by increasing saltwater intrusion but by also altering wetland hydrology.

Recommendation: We suggest you acknowledge that subsidence has caused loss of marsh in addition to loss of forested wetlands.

p. 7-46, 7-47; 1st incomplete sentence:
Comment: The term "freshwater recharge" is probably not appropriate in this context. The term recharge is usually used in the context of groundwater. In this case the document is discussing the likely effects of confined disposal facilities on wetland hydrology. The confined disposal facilities are serving to partially impound the wetlands behind them, and restricting flooding from the adjacent water body, in this case, probably Sabine Lake and the Neches River.

Recommendation: We suggest you replace the term "freshwater recharge" with a more accurate discussion of the likely effects of the confined disposal areas on adjacent wetland hydrology.

p. 7-46, 7-47; 2nd complete paragraph; 1st sentence:
Comment: The Sabine Lake estuary/wetland system is degraded, and the proposed project would further impact the system, albeit not as much as one might think such a large project would.

Recommendation: Please revise the statement to acknowledge that the ecosystem has been degraded and the proposed project would further impact it by some increment.

p. 7-46, 7-47; 2nd complete paragraph; 3rd sentence:
Comment: EPA has not seen a draft mitigation plan.

Recommendation: Please provide a draft mitigation plan for review and comment prior to issuance of the FEIS.

p. 7-46, 7-47; 2nd complete paragraph; 4th sentence:
Comment: As previously mentioned, this has not been demonstrated in the DEIS. Maps in the EIS seem to suggest that the number of culverts may not be adequate to maintain drainage and connectivity.

Recommendation: Please demonstrate that levee and culvert design would maintain future tidal connectivity, resulting in negligible impacts on floodplains both inside and

outside of the levee system. Please explain why culverts are not proposed for all existing coastal streams located along the proposed levee.

p. 7-50; 7.16.2.3 Brazoria Region Resource Impact Evaluation; 2nd paragraph; last sentence:
Comment: It is not clear this is an accurate statement since limited water quality sampling and analysis have been conducted in this area.

Recommendation: We suggest the COE aggregate the available water quality data and review. Discuss data limitations including number of samples, analyses, etc. and discuss conclusions. Specifically comment on analysis for contaminants.

p. 7-51; 7.17 ANY ADVERSE ENVIRONMENTAL IMPACTS THAT CANNOT BE AVOIDED SHOULD THE TSP BE IMPLEMENTED; 3rd sentence:
Comment: It appears that this estimate may not be consistent with others provided elsewhere in the document.

Recommendation: Please review the FEIS to ensure that wetland acreage impacts are reported consistently throughout the document.

p. 7-52; 7.18 ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES INVOLVED IN THE IMPLEMENTATION OF THE TSP; 2nd sentence:
Comment: It appears that this estimate may not be consistent with others provided elsewhere in the document.

Recommendation: Please review the FEIS to ensure that wetland acreage impacts are reported consistently throughout the document.

p. 7-52; 7.19 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY; 1st sentence:
Comment: It appears that this estimate may not be consistent with others provided elsewhere in the document.

Recommendation: Please review the FEIS to ensure that wetland acreage impacts are reported consistently throughout the document.

p. 7-52; 7.19 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY; 2nd sentence:
Comment: EPA has not seen a draft mitigation plan.

Recommendation: Please provide a draft mitigation plan for review and comment prior to issuance of the FEIS.

p. 8-4; 8.2 COST FOR THE RECOMMENDED PLAN;
Comment: EPA has not seen mitigation costs here.

> ***Recommendation:*** Please add compensatory wetland mitigation costs, revise the analysis, and discuss the conclusions in the FEIS.

p. 8-5; 8.5.2 Environmental Operating Principles; 1st sentence:
Comment: The DEIS does not include much detail regarding efforts taken to avoid and minimize impacts to aquatic resources. A draft mitigation plan has not been provided to EPA for review and comment.

> ***Recommendation:*** Please revise the FEIS to document efforts taken to avoid and minimize impacts to aquatic resources, in detail. Provide the agencies, including EPA, a draft compensatory wetland mitigation plan for review and comment prior to issuance of a FEIS.

p. 8-5; 8.5.2 Environmental Operating Principles; 2nd sentence:
Comment: Sustainability is not defined.

> ***Recommendation:*** Define sustainability in the FEIS and specify what it is being applied to.

p. 9-2; 1st complete paragraph; last sentence:
Comment: It is not clear what study is referred to here.

> ***Recommendation:*** Please clarify what study is referred to. Provide enough detail that the reader has an idea what it is. Discuss when it will be available. EPA would appreciate the opportunity for early involvement.

p. 9-3; 1st complete sentence:
Comment: What study is the Texas Coastal Study? Is it already underway? Will EPA be provided an opportunity to provide input?

> ***Recommendations:*** Please explain what this study is and when it will be conducted and completed. Will EPA have an opportunity for input?

p. 1-8; 1.10.1.3Freeport HFPP, Texas; 3rd sentence:
Comment: "planes" should be "plains".

p. 7-22; 7.7.2 FWP Alternatives for Sabine Region CSRM Plans; 3rd paragraph; last sentence:
Comment: Please change Total Daily Maximum Loads to Total Maximum Daily Loads.